Abstract Submitted
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Generating Initial Thermal Masses[1] JANE KIM, Michigan State Univ — At temperatures exceeding $T_c \simeq 155$ MeV, ordinary hadrons dissolve into their constituent particles, creating a state of matter called the quark-gluon plasma (QGP). Quark-gluon plasmas, produced in relativistic heavy-ion collisions at temperatures well above T_c, rapidly cool and expand as nearly perfect fluids. Below T_c, the particles group into color-neutral hadrons in a process called hadronization. As the hadron gas continues to cool, the particles scatter, merge, and decay, until their final state momenta are recorded. Since it is impossible to directly observe a QGP, a series of numerical models are used to infer its properties from the final state data. The focus of the my research was to generate particles with a mass distribution consistent with the spectral function during the simulated hadronization. I first employed a thermal-weighted Lorentzian mass distribution, but the average mass for each particle species was far lower than expected. To limit the skewing effects of the thermal weight, the Lorentzian distribution was modified to include dependencies on the momenta of the interacting particles. Another parameter was incorporated so that the distribution could include dependencies on the angular momenta in the future.

[1]Michigan State University Department of Physics and Astronomy, National Superconducting Cyclotron Laboratory

Jane Kim
Michigan State Univ

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